PROJECT 4B

Butte County Groundwater Monitoring Program

1. Project Description

Project Type:	**Groundwater/surface water planning**
Location:	**Butte County**
Proponent(s):	**Butte County**
Project Beneficiaries:	**Butte County water users, downstream water users, Delta**
Total Project Components:	***Short-term components, m*onitoring of quarterly groundwater levels and annual water quality in support of future conjunctive use projects and overall water resource management in the County**
Potential Supply:	**None**
Cost:	**$816,000**
Current Funding:	**Currently none; $290,000 potentially available through the California Department of Water Resources (DWR) Integrated Storage Investigations (ISI) contract**
Short-term Component:	**Installation of additional monitoring wells and extensometers; quarterly groundwater level monitoring; annual water quality monitoring**
Potential Supply (by 2003):	**None**
Cost:	**$616,000**
Current Funding:	**Currently none; $290,000 potentially available through the California Department of Water Resources (DWR) Integrated Storage Investigations (ISI) contract**
Implementation Challenges:	**Local concerns regarding export of groundwater, impacts to terrestrial habitats**
Key Agencies:	**Butte County Department of Water and Resource Conservation (DW&RC), California Department of Water Resources (DWR), Butte County Water Commission**

Summary

A primary effort for the Butte County DW&RC is implementing Chapter 33 of the Butte County Code relating to groundwater protection. Drought water transfers were undertaken in Butte County as a part of the 1991, 1992, and 1994 state-administered drought water bank, providing significant statewide benefits. Butte County's current main sources of water are surface water (55 percent), followed by groundwater (31 percent), and surface water reuse (14 percent). Supplies are distributed throughout the County in approximately the same pattern as demands, with the most water going to the East Butte inventory unit (64 percent), followed by West Butte (18 percent), Vina (10 percent), North Yuba (5 percent), Foothill (2 percent), and Mountain (1 percent). After the relatively successful drought water transfers that were carried out in 1991 and 1992, the largest transfer occurred in 1994. Water was transferred by substituting groundwater pumping in-lieu of using surface water. A number of concerns arose during this transfer, including the loss of pumping ability by third parties, which led to the passage of Measure G for groundwater protection in 1996. The proposed monitoring project would strengthen the management of Chapter 33 by completing the Butte Basin groundwater monitoring network and developing a monitoring program. Improved groundwater data would support the groundwater modeling efforts and help ensure that no local water users are negatively impacted by future conjunctive use projects.

Figure 4B-1 shows the existing monitoring well grid. Completion of the Butte Basin groundwater monitoring network has been closely coordinated with DWR's Northern District, individual landowners, and the four following water agencies: Butte County Department of Water and Resource Conservation, Butte Basin Water Users Association, California Department of Water Resources, and the Butte/Sutter Basin Area Groundwater Users Association. The Northern District has provided the leadership for this program. The remaining work to complete the monitoring network would likely involve the following:

- Ten 200-foot dedicated monitoring wells
- One 800-foot dedicated monitoring well
- Two 1,000-foot triple-completion dedicated monitoring wells equipped with extensometers

Butte County and Northern District Staff gained the support of the Butte County Board of Supervisors for this project, including the waiver of well drilling permit fees. Figure 4B-2 shows the approximate locations of the proposed new monitoring wells.

In addition, it is proposed that groundwater levels be measured approximately quarterly and water quality annually as part of this program. Monitoring would occur at the frequency and times outlined in Chapter 33 of the Butte County Code, which includes March, July, August, and October. An annual update would be provided in a report.

Short-term Component

The proposed monitoring project is considered a long-term project with a short-term component, namely the installation of monitoring wells. Several tasks related to the monitoring project would begin immediately upon project approval. The project would begin with and require hiring of staff or a consultant to support the proposed groundwater

activities. The monitoring wells and extensometers are expected to be installed within 1 year and thus fully operational by December 2002. Overall details of program management and administration are expected to be arranged within the first 6 months, simultaneous to design and planning of the installation of the wells.

Long-term Component

The primary purpose of this evaluation is to evaluate the potential for this project to provide water supply benefits in the short-term (by end of 2003). As part of this initial evaluation, potential long-term components of the proposed project (defined as any part of the project proceeding past or initiated after December 2003) have been considered on a conceptual level. Further consideration and technical evaluation of long-term component feasibility and cost will occur as the next level of review under the Sacramento Valley Water Management Agreement. Long-term-component project descriptions are included in these short-term project evaluations only as a guide to the reader to convey overall project intent.

Project completion is expected to occur 6 years after project approval in December 2007. Upon completion of the installation of the monitoring wells and extensometers, monitoring of groundwater levels, water quality, and various other designated parameters would continue for 5 years. At the end of the 5 years, Butte's intention is to have the program funded through the management of its State Water Project Entitlement of 27,500 acre-feet per year. The ultimate goal of the groundwater monitoring program is to support future conjunctive use projects and overall water resource management in the County and to facilitate the proper planning and management of these projects. In lieu recharge is being investigated under a separate study (Project 4A, Butte County Integrated Watershed and Resource Conservation Program).

The proposed project schedule detailed in Table 4B-1 assumes that the project would be underway in January 2002.

TABLE 4B-1
Butte County Groundwater Monitoring Project Estimated Project Schedule
Butte County Groundwater Monitoring Program

Task	Duration	Completion Estimate
Design and Detail Program Management	6 months	June 2002
Install Monitoring Wells/Extensometers	1 year	December 2002
Ongoing Monitoring and Administration of Program	5 years	December 2007

2. Potential Project Benefits/Beneficiaries

The monitoring program would be a key component of a groundwater transfer program. The data provided would allow the County and others to ensure that conjunctive use and water transfers do not overextend existing resources. Improved management of the local groundwater resources could in turn provide numerous benefits to Butte County water users, downstream water users, and Delta water needs.

Water Supply Benefits

This project would not produce any direct benefits to existing water supply. However, this effort could quantify sustainable pumping quantities and the required recharge to maintain acceptable seasonal groundwater level fluctuations and avoid long-term drawdown of the groundwater table. The project would complete the monitoring network and provide regular monitoring data on the groundwater levels and groundwater quality. This process would be incorporated into a groundwater model that would assist with planning any proposed conjunctive use projects in the County. Ultimately, the monitoring and modeling projects would lead to managed conjunctive use projects with real water supply benefits.

Primary beneficiaries of an implemented conjunctive use program would be agricultural and urban water users in Butte County. The new supply would supplement surface water supplies and firm up water needs in dry years for users. Surface water that is normally diverted could be made available to downstream users.

Water made available through a developed conjunctive use project could be used to meet environmental demands in the Delta or other water bodies. Increased groundwater pumping could result in reduced surface water diversions, which would increase in-stream flows or helps meet water quality standards in the Delta.

Water Management Benefits

The focus of this project is to develop the tools for proper conjunctive management of surface water and groundwater supplies within Butte County. Proper management and an understanding of the impacts of increased groundwater development will be critical if any proposed conjunctive use projects are to be implemented. The monitoring project is a necessary step for development. Adequate monitoring is essential to ensure that no local water users are negatively impacted and that water quality remains high for all Butte County water users. Specific benefits resulting from an implemented conjunctive use project could include firming dry-year supplies for local water-short areas.

Environmental Benefits

The proposed monitoring project would not directly provide environmental benefits, but would provide valuable information that could be used to evaluate future conjunctive use projects. Future conjunctive use projects would use the data and related model to determine environmental benefits in terms of water quantity. Reduced surface water diversions could result in more water for in-basin and out-of-basin users, including environmental designees.

Water Quality Benefits

Water quality parameters would be measured once a year and included in the annual report. Monitoring would help establish a baseline for groundwater quality and possibly identify sources of contamination. Should increased surface water supply result from future conjunctive management programs, associated water quality benefits (e.g., decreased concentration of constituents) would be expected.

3. Project Costs

The cost opinions shown, and any resulting conclusions on project financial or economic feasibility or funding requirements, have been prepared for guidance in project evaluation from the information available at the time of the estimate. It is normally expected that cost opinions of this type, an order-of-magnitude cost opinion, would be accurate within +50 to -30 percent. Project costs were developed at a conceptual level only, using data such as cost curves and comparisons with bid tabs and vendor quotes for similar projects. The costs were not based on detailed engineering design, site investigations, and other supporting information that would be required during subsequent evaluation efforts.

The final costs of the project and resulting feasibility will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, implementation schedule, continuity of personnel and engineering, and other variable factors. As a result, the final project costs will vary from the opinions presented here. Because of these factors, project feasibility, benefit/cost ratios, risks, and funding needs must be carefully reviewed prior to making specific financial decisions or establishing project budgets to help ensure proper project evaluation and adequate funding.

Table 4B-2 lists the short-term cost breakdown for the 13 additional monitoring wells and for 1 year of monitoring activities. Long-term costs would be $200,000 for ongoing monitoring ($50,000/year for 4 years).

TABLE 4B-2
Estimated Short-Term Project Costs
Butte County Groundwater Monitoring Program

Item	Quantity	Units	Unit Price ($)	Total Cost
200-foot Dedicated Monitoring Wells (10 wells)				
Construction of 200-foot well	10	Each	16,000	160,000
Electric-log analysis of well	10	Each	2,500	25,000
Acquisition of Stevens F-Type Water-level Recorder	10	Each	2,500	25,000
Material and construction of cover shed for well	10	Each	2,500	25,000
Mapping	10	Each	500	5,000
Geologist	10	Each	1,500	15,000
Subtotal for 200-foot wells				255,000
Indirect costs (County overhead) for 200-foot wells at 20%				51,000
Total cost for 200-foot wells				**306,000**
800-foot Triple-completion Monitoring Well (1 well)				
Construction of triple-completion monitoring well	1	Each	50,000	50,000
Electric-log analysis of well	1	Each	4,000	4,000
Acquisition of Stevens F-Type Water-level Recorder	1	Each	2,500	2,500
Material and construction of cover shed for well	1	Each	2,500	2,500
Mapping	1	Each	500	500
Geologist	1	Each	3,000	3,000
Subtotal for 800-foot triple completion well				62,500
Indirect costs (County overhead for 800 -foot wells at 20%				12,500
Total cost for 800-foot triple-completion well				**75,000**
1,000-foot Triple-completion Monitoring Wells (two wells)				
Construction of triple-completion monitoring well	2	Each	55,000	110,000
Electric-log analysis of well	2	Each	4,000	8,000
Fabrication and installation of extensometer	2	Each	8,500	17,000
Acquisition of Stevens F-Type Water-level Recorder	2	Each	2,500	5,000
Material and construction of cover shed for well	2	Each	2,500	5,000

TABLE 4B-2
Estimated Short-Term Project Costs
Butte County Groundwater Monitoring Program

Item	Quantity	Units	Unit Price ($)	Total Cost
Mapping	2	Each	500	1,000
Geologist	2	Each	4,000	8,000
Subtotal for 1,000-foot triple completion well				154,000
Indirect costs for 1,000 -foot wells at 20%				31,000
Total cost for 1,000-foot triple-completion wells				**185,000**
Monitoring Program				
Quarterly groundwater level/annual water quality monitoring				50,000
Total cost for monitoring program				**50,000**
			Total Short-term Cost	**616,000**

Other Sources of Funding

Funding may be available through the Northern District DWR under the Integrated Storage Investigation (ISI) Program for seven 200-foot dedicated monitoring wells and one 800-foot triple-completion dedicated monitoring well. If this funding is received, the County would still need funding for three 200-foot dedicated monitoring wells and two 1,000-foot triple-completion dedicated monitoring wells equipped with extensometers for the Richvale Irrigation and Western Canal Water District area. If the ISI funding does not come through, the County needs funding for all 13 wells listed. Funding is also needed for the development of the monitoring program itself. AB 303 is another potential funding source, although it would not meet the schedule described below. If ISI funding is received, a remaining short-term funding request for $ 326,000 would be made. Without ISI funding, the total short-term funding request is for $ 616,000. The $200,000 for ongoing monitoring is needed in either case.

4. Environmental Issues

This project is primarily an exercise in data collection and analysis. Minimal physical impacts are anticipated to occur as a result of the project. The monitoring wells would be sited to minimize any disruption of local terrestrial habitats and species. Environmental improvements would not occur as a direct result of the project; however, data would be generated from the project that could be used to evaluate future conjunctive use projects. It is anticipated that the appropriate level of environmental documentation for the project would be a Categorical Exclusion/Categorical Exemption, requiring a very minimal degree of effort.

A draft California Environmental Quality Act (CEQA) environmental checklist has been prepared for this proposed project and is included as an attachment to this evaluation. The checklist provides a preliminary assessment of the environmental areas of concern, as well as areas that are not likely to be of concern, associated with this project. The checklist would be finalized as part of the environmental compliance required for project implementation.

5. Implementation Challenges

There are serious concerns about the long-term drawdown of groundwater tables and land subsidence as a result of any conjunctive use program. Completion of the monitoring

network would help in determining the effects of increased groundwater pumping. Local involvement would be required to implement any conjunctive use project, and the modeling effort that would be supported by the monitoring program could be a vehicle for public involvement. Having the model grounded in current, publicly-accepted data will help create public confidence in the model, and the model results may be more believable when prospective conjunctive use programs are evaluated.

Long-term exporting of in-basin water supplies is a very sensitive political issue. Estimates of local benefits and exported water would have to be a part of any future conjunctive use program. The local opposition would likely increase as the water produced is mostly for export. A public outreach program incorporated with the monitoring program may be required to address public perception.

Key Stakeholders

Table 4B-3 describes some of the key stakeholders that would be involved with the implementation process. These stakeholders would likely be involved regarding the impacts and benefits of a future conjunctive use project.

TABLE 4B-3
Stakeholder Roles and Issues
Butte County Groundwater Monitoring Program

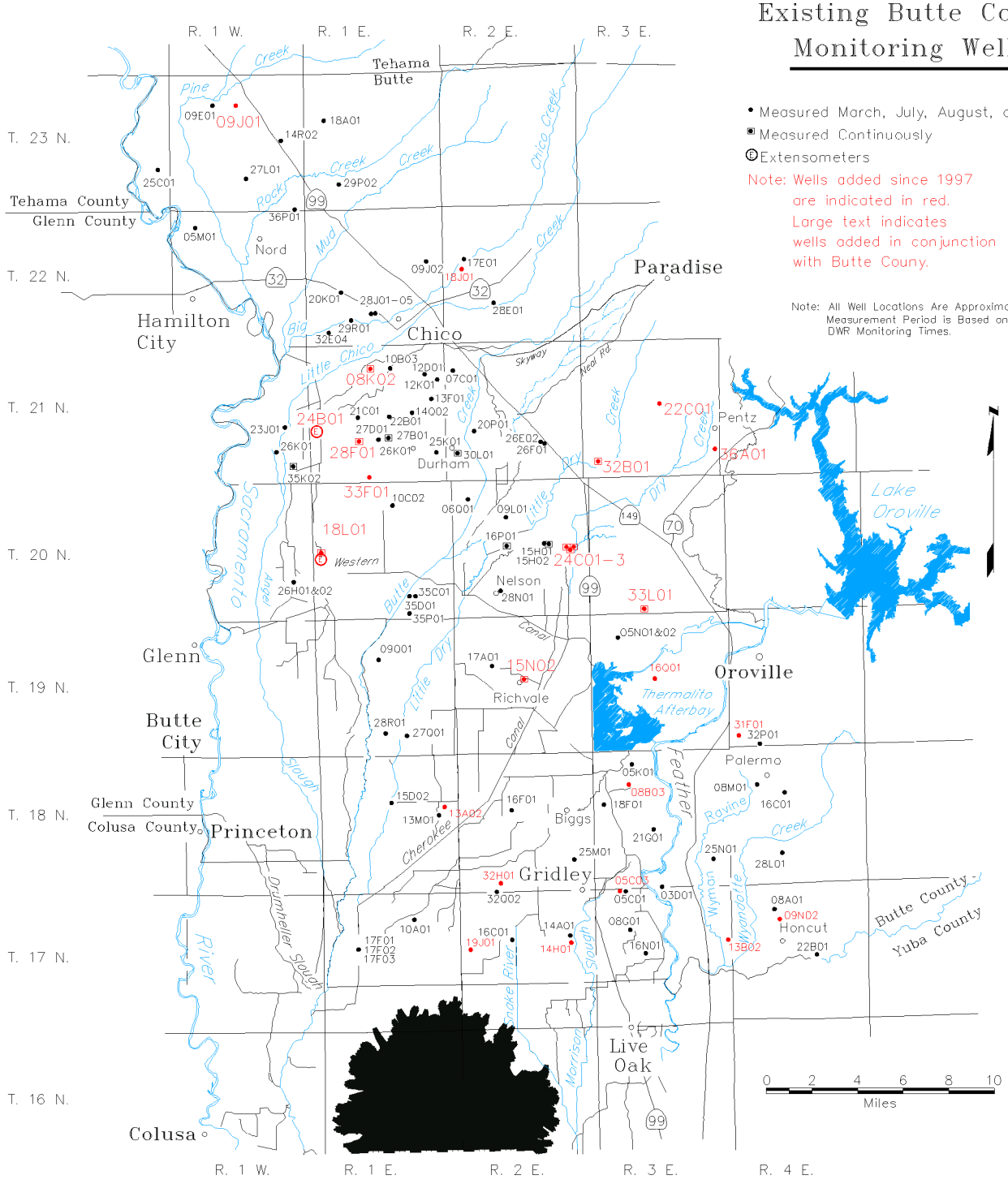
Stakeholder	Role	Issues
Butte County DW&RC	Monitoring project lead	Quantify potential for development and safe yield, protect existing surface water rights, overdraft, land subsidence, provide groundwater data
Butte County Water Commission	Groundwater developer	Make sound decisions associated with potential conjunctive use projects
Irrigation districts cities, landowners	Groundwater user	Groundwater levels
South-of-Delta exporters	Potential benefactor of new supply	Availability of new water for export
Various locals interest groups	Protect local economy	Export of new water
Environmental interests	Habitat protection for Sacramento River and Delta	Effect on Sacramento River and Delta inflow: timing, temperature, quantity
DWR	ISI lead; groundwater monitoring	Coordination with ISI program
Butte Basin Water Users Association	Surface water supplier	Coordinate annual groundwater report

6. Implementation Plan

This project is ready to proceed upon complete funding. Assuming that the project would begin in January 2002, the estimated completion date is December 2007. The time schedule includes 6 months to develop the monitoring program, 1 year to install the new wells, and 5 years of ongoing groundwater level and water quality monitoring.

This project would be coordinated with the Butte County Groundwater Modeling Program and the Butte County Integrated DW&RC Program.

Funding could be phased similar to the proposed schedule, although the bulk of the funding would be needed in the first year. Two-thirds of the cost is required for installation of the new wells, recording devices, and extensometers, which are planned for the first year of the project. Figure 4B-3 shows the general schedule for the monitoring and modeling project, which is assumed to be complete in December 2007.



Butte County

Revised: April 2, 2001

FIGURE 4B-1
EXISTING MONITORING WELL GRID
BUTTE CO. GROUNDWATER MONITORING PROGRAM
SHORT-TERM PROJECT EVALUATIONS
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT

CH2MHILL
in association with
MONTGOMERY WATSON HARZA
MBK
SWRI

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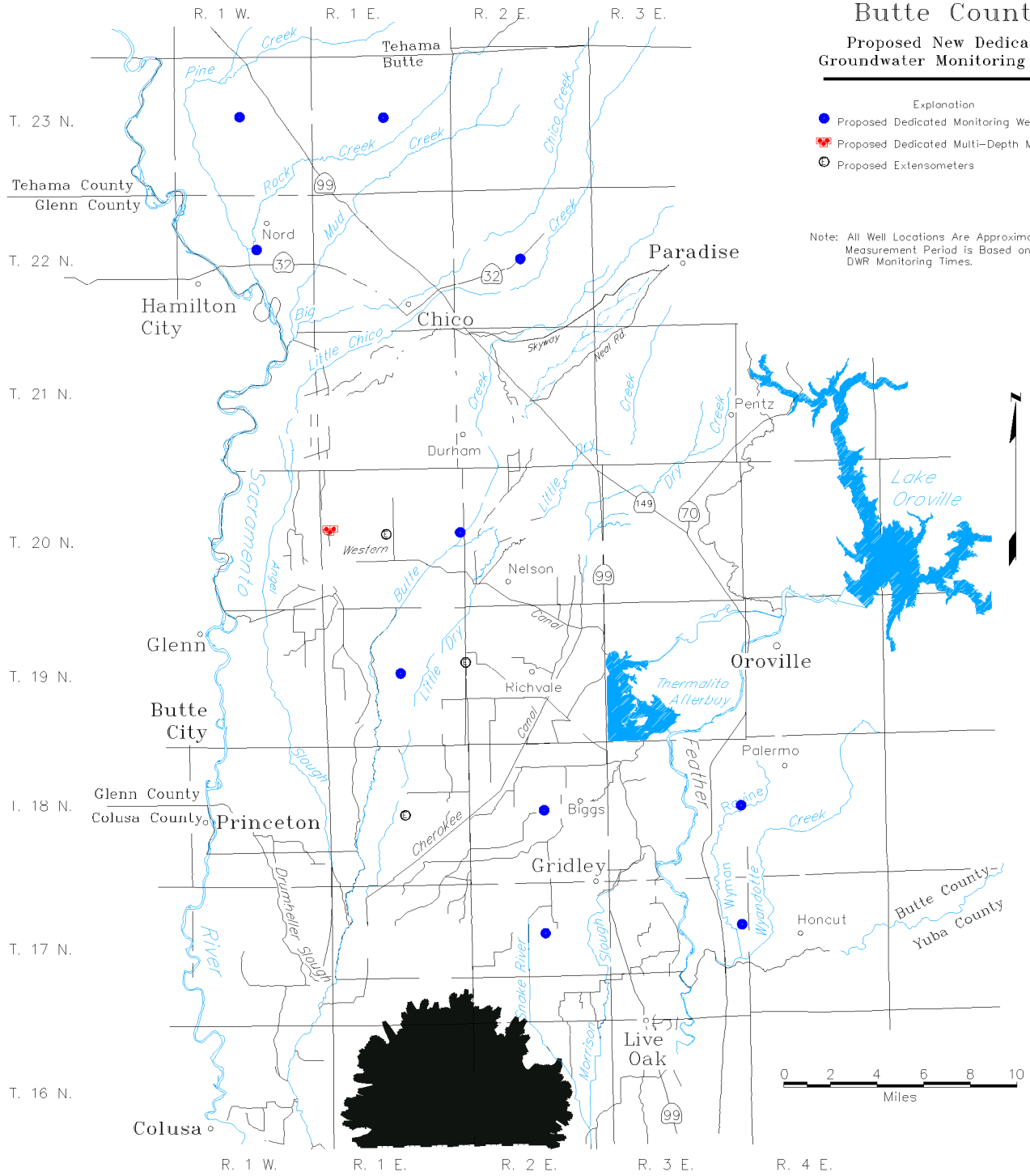


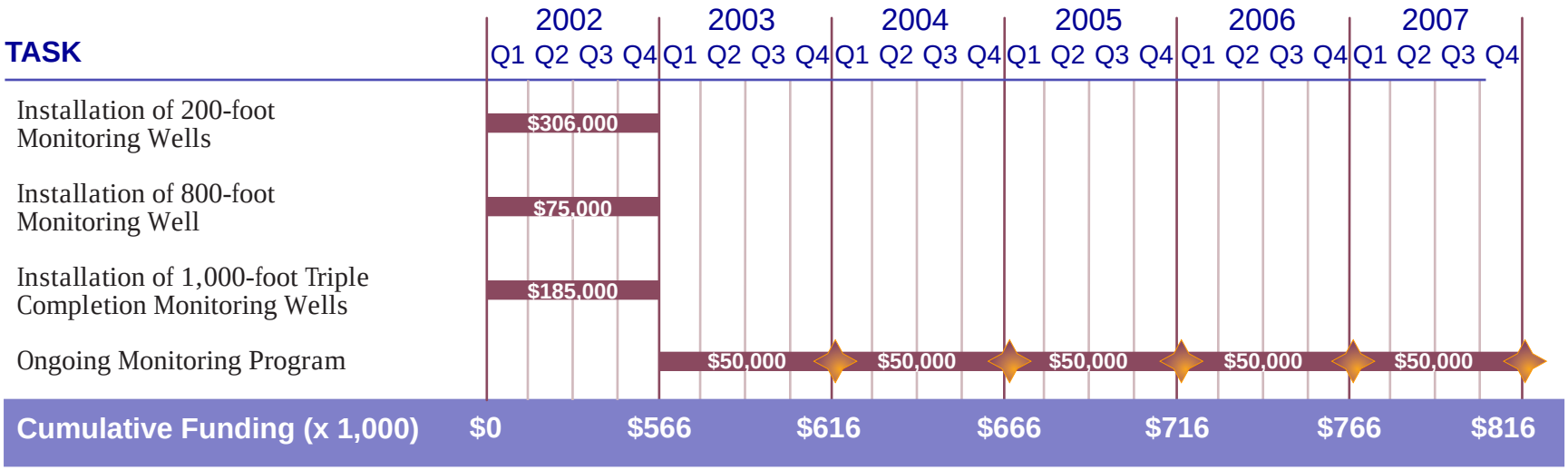
Butte County

Revised: April 2, 2001

FIGURE 4B-2
NEW MONITORING WELL LOCATIONS
BUTTE CO. GROUNDWATER MONITORING PROGRAM
SHORT-TERM PROJECT EVALUATIONS
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT

CH2MHILL
in association with
MONTGOMERY WATSON HARZA
MBK
SWRI

W072001014RDD_44 (10/26/01)



LEGEND

ANNUAL MONITORING REPORT

FIGURE 4B-3
PRELIMINARY IMPLEMENTATION SCHEDULE
BUTTE CO. GROUNDWATER MONITORING PROGRAM
SHORT-TERM PROJECT EVALUATIONS
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT

CH2MHILL
in association with
MONTGOMERY WATSON HARZA
MBK
SWRI

W072001014RDD_11 (10/26/01)

Project 4B—Draft CEQA Environmental Checklist

Project 4B—Environmental Factors Potentially Affected:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology/Soils
☐ Hazards & Hazardous Materials	☐ Hydrology/Water Quality	☐ Land Use/Planning
☐ Mineral Resources	☐ Noise	☐ Population/Housing
☐ Public Services	☐ Recreation	☐ Transportation/Traffic
☐ Utilities/Service Systems	☐ Mandatory Findings of Significance	

Determination:

(To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature Date

_____ _____

Printed Name For

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
I. AESTHETICS—Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒
II. AGRICULTURE RESOURCES—Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☒	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☒	☐
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☒	☐
III. AIR QUALITY—Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).	☐	☐	☐	☒
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES—Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
Ten 200-foot dedicated monitoring wells, one 800-foot dedicated monitoring well, and two 1,000-foot triple completion dedicated monitoring wells equipped with extensometers would be installed. These wells may need to be placed in environmentally sensitive areas. The wells would be sited to minimize any disruption of local habitat areas.				
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☒	☐	☐
See response to IV (a) above.				
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act, (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or, impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
See response to IV (a) above.				
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?.	☐	☐	☒	☐
V. CULTURAL RESOURCES—Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☒	☐	☐
A significant impact would occur if a cultural resource were to be disturbed by activities associated with project development. In the event that an archaeological resource was discovered, appropriate measures would be undertaken to minimize any impacts.				
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
See response to V (a) above.				
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
See response to V (a) above.				

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐
See response to V (a) above.				
VI. GEOLOGY AND SOILS—Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?.	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
VII. HAZARDS AND HAZARDOUS MATERIALS—Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
Construction equipment would require the use of potentially hazardous materials. The potential for a significant hazardous material spill would be unlikely because of the limited amount of such materials that would be used onsite. If a spill or release of such materials were to occur, it could potentially be significant unless best management practices (BMP) were implemented.				
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
See response to VII (a) above.				

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒
VIII. HYDROLOGY AND WATER QUALITY— Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted). *There are serious concerns about the long-term draw-down of the groundwater table and land subsidence. Model development would help in determining the effects of increased groundwater pumping. Minimal pumping of groundwater would occur as a result of the monitoring program and model development; however, the impact is considered less than significant to groundwater supplies.*	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒
IX. LAND USE AND PLANNING—Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☒	☐
X. MINERAL RESOURCES—Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒
XI. NOISE—Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. *Short-term noise levels are expected to increase for the duration of construction of each monitoring well. These noise increases would be temporary, and mitigation measures would be implemented to reduce any impact to a less than significant level.*	☐	☒	☐	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. *See response to XI (a) above.*	☐	☒	☐	☐

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
XII. POPULATION AND HOUSING—Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
XIII. PUBLIC SERVICES—Would the project:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services?	☐	☐	☐	☒
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☒	☐
XIV. RECREATION—Would the project:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XV. TRANSPORTATION/TRAFFIC—Would the project:				
a) Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☒	☐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Result in inadequate parking capacity?	☐	☐	☐	☒
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒
XVI. UTILITIES AND SERVICE SYSTEMS—Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XVII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐